Army Science & Technology

ASSOCIATION OF THE UNITED STATES ARMY ACQUISITION SYMPOSIUM

Lessons Learned & Where We Are Today

September 13, 2004

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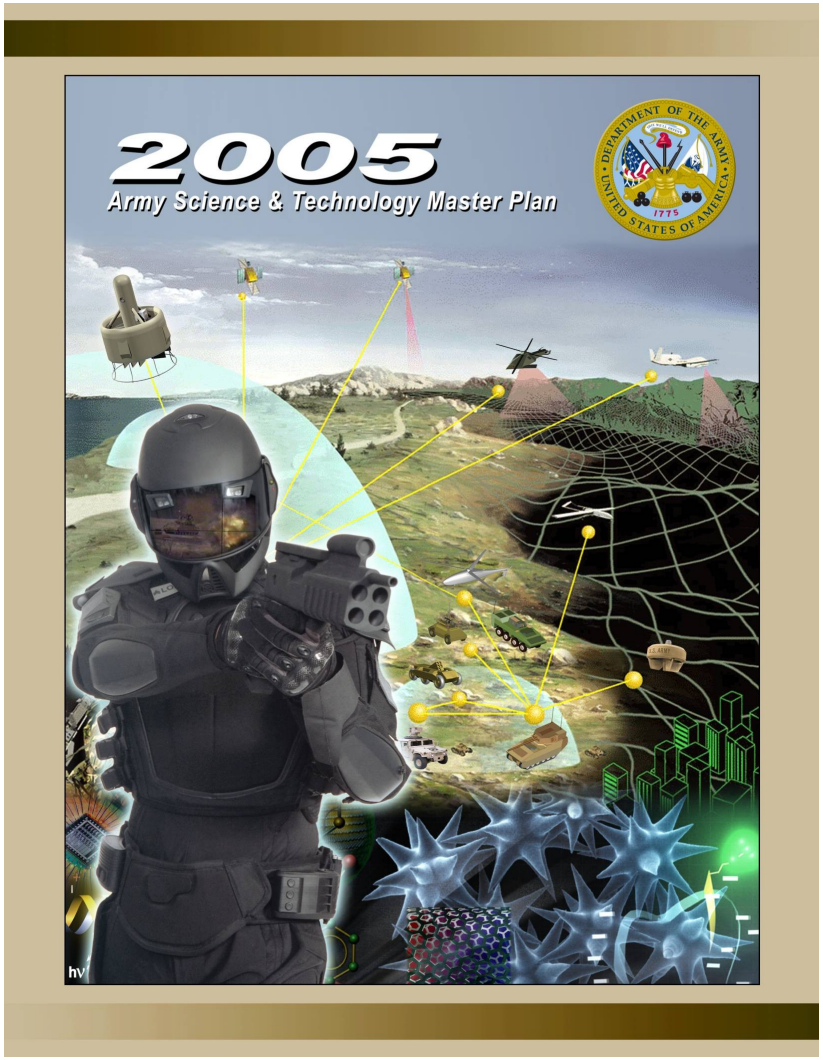
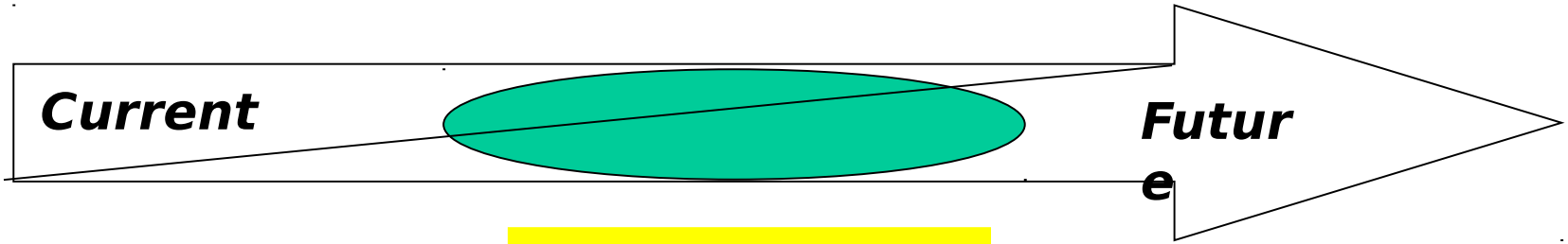
Purpose



- ***S&T Response to Lessons Learned***
- ***Where We Are With FCS***
- ***Where You Can Help***

Army S&T must support both current and future needs



Increasingly:
- **Integrated**
- **Expeditionary**
- **Networked**
- **Decentralized**
- **Adaptive**
- **Decision Superior**
- **Lethal**

Enhanced Capabilities

Accelerated Development and Fielding of Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities Solutions

The characteristics of Army Transformation – Responsiveness, Deployability, Agility, Versatility, Lethality, Survivability, and Sustainability --fully support Future Joint Force Attributes

Support to Current Operations - Counter IED -

Change Detection

Goal: Use change detection to locate IEDs along routes using airborne sensors

Near Term Platforms

AH-64

TUAV

UH-1 (USMC)

imagery fed into...

Change Detection Workstation

- Developed under JAC ACTD
- Tested by Soldiers

Field Report

At TOC:
- Hand Generate Spot Reports
- Enter into FBCB2 / BFT (Initial report and updates)

Objective:
- Utilize existing sensor systems to identify areas of change along convoy or transportation routes
- In real or near-real time identify to the Operator areas of potential concern for IEDs emplacement

Near Term:
- Existing A/C & Sensors
- Existing Change Detection Work Station
- 5 Units Purchased and Fielded by USMC to OIF in July 04

Mid Term: (next 6 mos)
- Dedicated Sensor Pod
- Workstation Automation

5 Units Deployed to OIF in July 04

081604_Killion_Survivability QFR_Gen Byrnes

- System tested at Yuma on UH-1, Apache, Shadow
- 5 Units purchased and fielded by USMC in July 04

Warlock Jammers

Green – vehicle mounted

Red – stand alone

- The Warlock Family of jammers are designed to protect against Radio Controlled Improvised Explosive Devices (RCIEDs)
- Warlock provides enhanced capability to detect and jam artillery fuzes and IEDs with minimal effect on approved electronics devices in the area
- Focus is on an easy to use and effective force protection capability for convoys, fixed sites and dismounted warfighters
- 700 units of varying capability have been deployed in OIF/OEF

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- Family of IED Jammers
- Over 700 units fielded

Response to lessons learned

Support to Current Operations - Vehicle Protection -

Vehicle Protection: Expedient Armor* for Standard HMMWVs

- Fielded for Operation Iraqi Freedom with initial fielding in November 2003
- ARL developed a technology solution, TARDEC refined the design and integrated it into the vehicle and the Tank-automotive and Armaments Command's Ground Systems Industrial Enterprise is now taking the resultant technical data package and making the kits in quantity
- AMC depots are producing the remaining 4,000 Armored Survivability Kits, at a rate of over 400 kits per month through the Spring of 2004
- Has saved lives from both small arms and IED attacks

First Convoy of Expedient Armor Equipped HMMWVs arrives in Iraq

Occupants survived IED Attack

*Expedient Armor is NOT being put on up-armored HMMWVs

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- Total of 7556 HMMWV armor survivability kits in production
- 7127 Kits Installed as of J

Response to lessons learned

- 620 Stryker Kits Built - 310 units (one brigade) deployed to Iraq, 310 units sent to Ft. Lewis
- 60 M1 Kits Built

Vehicle Protection-Stryker Bar Armor

- Developed by GDLS.
- This armor is in use on the Strykers in Iraq in 2004. (installed in 2003).
- Bar Armor requires at least ~10-12" of distance from robust base armor to be effective.
- Bar armor is intended to damage the RPG, to prevent the formation of a "Shaped Charge Jet". Bar spacing based on destroying RPG without "arming" it.
- Even in "Successful Defeat of RPG", there will still be an explosive blast. This is why you need a protective layer of robust armor.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

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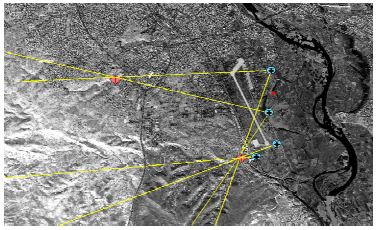
Support to Current Operations - C4ISR -

Unattended Tactical Acoustic MASINT Sensor (UTAMS)

- ARL developed technology solution for identifying the location of mortar or rocket launch
- 4 units fielded to INSCOM for Operation Iraqi Freedom, 1 unit in production
- UTAMS can be modified to discriminate between mortar launch/detonation and other non-impulsive battlefield sounds (cars, voices, small arms fire, etc.)
- System has successfully identified the location of both mortar and IED events in Iraq
- Three arrays used to triangulate on location of fire
- Estimated System Cost: $75K per unit



- 4 Systems Deployed to INSCOM in OIF
- 1 System in Production

Response to lessons learned

PacBots in Afghanistan

- ARL developed, integrated, and demonstrated tactical robotic concepts in experimental and operational environments
- Robots used control concepts first developed and demonstrated by ARL for PM Land Warrior

- PacBots built by iRobot were fitted with sensors and used to scout and clear caves and buildings
- An 82nd Airborne Division soldier, with only four hours' training, used a robot to clear 11 large caves in a day.

- 4 PacBot units were deployed to the OEF in June '02
- Between 2 July and 1 Aug 2003, the robots helped clear three bunkers, an ammunition cache, 26 [illegible]

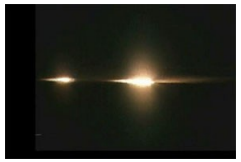
Where We Are Today?
Technologies in the FCS Trade Space

FCS C2

MOSAIC

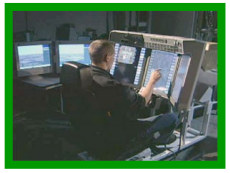
Networked Communications

MRM

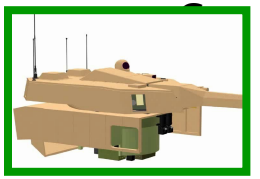

CKEM

PAM

LtWt 120mm


Crew Station

LAM


Auto

Joint Interoperability

Networked Lethality

Networked Battle Command

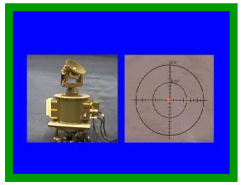
KPP's

Sustainability & Reliability

Survivability

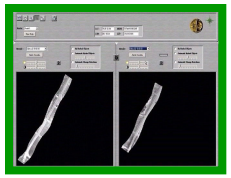
Transportability

Training


SATCOM OTM

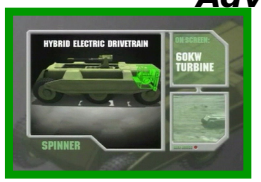
Hummingbird

Active Protection

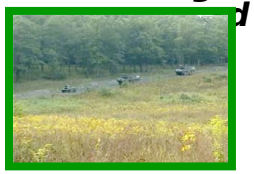

Change Detection

MATREX

Advanced Mobility


Hybrid Electric Drive

AHED


Leader/ Follower

Water Operation

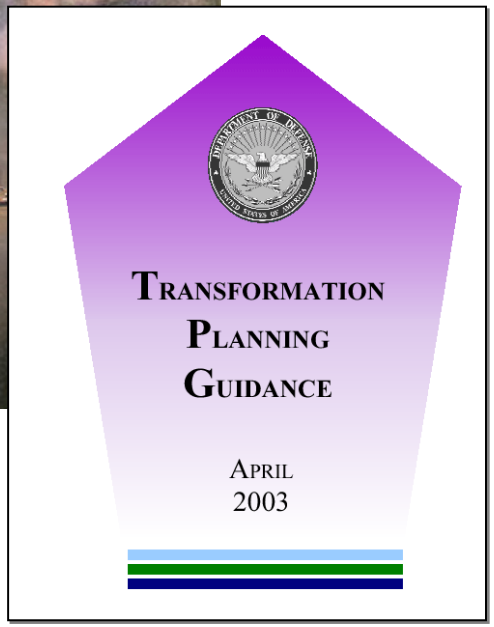
Adv Armor

Technologies for the Current & Future Force

Where You Can Help
–Technology Areas of Interest --

- ***Counter-IED***
- ***Affordable CID***
- ***Antennas***
- ***Heavy Lift Rotorcraft Technologies***
- ***Robotics (including Autonomy)***

The Army…
Transforming while at War



"…we must achieve: fundamentally joint, network-centric, distributed forces capable of rapid decision superiority and massed effects across the battlespace."

Secretary Rumsfeld

"…a future force that is defined less by size and more by mobility and swiftness, one that is easier to deploy and sustain, one that relies more heavily on stealth, precision weaponry and information technologies."

George W. Bush